Office Memorandum • UNITED STATES GOVERNMENT

50X1

TO : The Files DATE: 9 April 1954

FROM : 50X1

SUBJECT: Trip Report - Contract Task I 50X1

1. A visit was made to the facilities of 50X1
on 6 April 1954, 50X1
to discuss matters pertaining to the development of the 50X1
Automatic Equipment and to accept delivery of a completed engineering model for a laboratory and operational evaluation.

2. Those present for a discussion of the subject equipment were:

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3. The contractor has satisfactorily re-designed the magnetic tape stepping mechanism for parallel key circuitry, and removed the sluggishness encountered with the series connections as reported in a 5 March trip report. In addition, the condenser discharge method of actuating the stepping solonoid has been abandoned. The present system incorporates a "priming" relay, the contacts of which are closed when a key is depressed. Upon releasing the key after the baud recording has been accomplished, the wiping action of contact fingers on a key ring complete the 250 volt solonoid circuit through a second miniature relay, which in turn de-energizes the "priming" relay and opens the common return to ground.

4. As noted in an earlier trip report, the response of all pulses as observed on an oscilloscope were not uniform. The contractor has improved the reading head to a point where all pulses appeared to have a uniform amplitude of (15) volts, base line to peak. The noise is approximately 2 volts and the over-shoot approximately 5 volts at the same point of reference. Since the flip-flop is biased at (12) volts, the margin of tolerance appears adequate. The bias is now fixed and requires no field adjustment.

Now 17 volts Now 20 volts

5. The engineering model of the represents a serviceable 50X1
unit and establishes the theoretical practicability of such a system of communication. The noisy operation of the stepping solonoid remains a problem. The contractor's approach to this problem has 50X1
been set up as a separate study. A working model of a new system

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was observed. There is no doubt but that the noise factor can be reduced but just how much is yet to be established. The re-design of the solonoid stepping mechanism is important since a solution to the noise problem, along the lines presently being directed by the contractor, will simultaneously result in reduced input power requirements which would be desirable for battery and/or transistorized versions of the equipment.

6. The engineering model with an autotransformer in the power supply results in the chassis being at a floating ground level. This may have been an oversight by the contractor. At any rate he is investigating transformers and any future prototypes will provide the required transformer isolation.

7. The present engineering model has a writing head with an air gap of .005 inch. The tape output is then fed to a patented wide band amplifier which has a gain of 9000. If the equipment is to be further miniaturized, the amplifier would be replaced with tubes with a gain of 4000. To overcome this loss in gain, the contractor is of the opinion that a further reduction in the air gap will result in increased amplitude of the flux pattern thus yielding integrated pulsed of greater amplitude. The contractor would incorporate these features in the three prototypes should they be ordered.

8. The present output circuitry of the [redacted] includes the normal filter that is used to prevent arcing of the relay points when working into a .060 amphere teletype line. This network should be removed for [redacted] or other transmitter operation. 50X1 50X1

9. [redacted] has been the design engineer on the [redacted] for over a year and impresses the undersigned as highly capable. [redacted] is being inducted into the Army in approximately two months. This matter is presented with the possible view of obtaining his services as an enlisted man at the R&D Laboratory should such personnel procurement not be in conflict with Agency policy. 50X1 50X1 50X1

10. Courtesy calls were made on [redacted] Chief Engineer [redacted] 50X1 50X1

[redacted] 50X1